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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,232	07/28/2003	Hsieh Kun Lee		6566

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WEI TE CHUNG
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EXAMINER

WRIGHT, INGRID D

ART UNIT	PAPER NUMBER
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2835

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/629,232	Applicant(s) LEE ET AL.	
	Examiner Ingrid Wright	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-16 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/28/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/28/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Election/Restrictions***

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

<u>SPECIES</u>	<u>FIGURES</u>
I	1 and 2
II	3 and 4
III	5 and 6

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1-5, 7, and 9-15 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims

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are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with **Mr. Wei Te Chung** on 06/06/05 a provisional election was made without traverse to prosecute the invention of I, claims 6 and 16. Affirmation of this election must be made by applicant in replying to this Office action. Claim 8 has been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The examiner of record has considered the information disclosure statement (IDS) submitted on 07/28/03.

Specification

4. The abstract of the disclosure is objected to because applicant failed to include element numbers in parenthesis () throughout the abstract. If applicant's intent is to cite element numbers, applicant must be consistent, i.e. whenever the element is named an element number should also be given. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7,9,11,12,13,14,15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bright (US PN 5833472) in view of Katsui (US PN 6487079 B2).

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With respect to claims 1 & 12, Bright teaches (Fig. 3) a printed circuit board (8) having an electronic package (2); a retention module (30) surrounding the electronic package (2), the retention module (30) being integrally formed and defining two positioning holes (33) at symmetrically opposite sides of a center thereof two pins (12) positioned and welded (via soldering) to the printed circuit board (8); a heat sink (50) (Column 2, Lines 63-63 & Column 4, Lines 1-3, 7-11).

Bright does not teach a clip cooperating with the retention module to press the heat sink against the electronic package and instead, teaches the use of screw fasteners (80) to press the heat sink (50) against the package (2).

Katsui teaches (Fig. 1, 4B) a clip (60, 62) cooperating with the retention module (30B, 31') to secure a heat sink (50) to the retention module (30B, 31') and press the heat sink (50) against the integrated circuit package (20, 21), in order to allow the heat sink (50) to be removed efficiently from a printed circuit board (10) (Column 7, Lines 26-28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to secure the heat sink to the retention module of Bright with the clip as taught by Katsui, instead of screws, in order to have an alternate equivalent means of retention and for allowing a more quick and efficient means of removing the heat sink from the printed circuit board.

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With respect to claim 2, Bright teaches (Fig. 3) a pair of locating holes (9) corresponding to the positioning holes (33) of the retention module (30), and the pins (12) are welded into the locating holes (9) (Column 4, Lines, 8-11).

With respect to claim 3, Bright teaches a pin comprising (Fig. 3) a blocking portion, welding portion and a connecting portion that is comprised of a recess (inner diameter of element (12)) of the pin (12) and element (80). Each of said portions sequentially have successive reduced diameters. The blocking portions (top surface of element (17)) abut against the retention module, the connecting portions (element (80) in recess of element (12)) are lodged in the positioning holes (33) and the welding portions (18) are welded into the locating holes (9) of the printed circuit board (8) (Column 4, Lines 1-11).

With respect to claim 4, Katsui teaches (Fig. 3,4B) a clip (70,62) that comprises a pressing portion (62C) to press a heat sink (50) against the electronic package (21), and a pair of clamping portions (62B) engaging with the retention module (31B, 31') (Column 7, Lines 37-50).

It would have been obvious to one of ordinary skill in the art to use a clip in the device of Bright as stated above, and further for the clip to have pressing and clamping portions as a means of securing the heat sink against the package.

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With respect to claim 5, Katsui teaches (Fig. 1) standoff portions (30B) extending from retention module (30) to isolate the module from the printed circuit board.

Bright does not appear to teach separate standoffs in addition to the pins (12). The pins (12) do, however, act as standoffs to separate the module from the printed circuit board.

It would have been obvious to one of ordinary skill in the art to use the standoff portions of the retention module of Katsui in the retention module of Bright to allow for more effective cooling of the device as taught by Katsui.

With respect to claim 6, Katsui teaches (Fig. 4B) a clip (62), the clamping portions (62B) extend from respective opposite sides of the pressing portion (62C) toward the printed circuit board (11), and the clamping portions (62B) form distal hooks engagingly clasping the retention module (31') (Column 7, Lines 37-50).

Katsui does not teach a clip made of plastic.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the clip out of a known material such as plastic, in order to use a material that is well known and readily available.

With respect to claim 7, Katsui teaches (Fig. 4B) a pair of catches (31D) integrally formed outwardly from the retention module (31') at diagonally opposite corners thereof respectively, the catches (31D) engaging with the clamping portions (62B) of the clip (62) (Column 7, 37-44).

With respect to claim 9, Katsui teaches (Fig. 4B) a pair of symmetrical catches (31D) integrally formed outwardly from opposite sides of the retention module (31'), the catches (31D) engaging with the clamping portions (62B) of the clip (62) (Column 7, Lines 37-44).

With respect to claim 11, Katsui teaches (Fig. 1) a retention module (30B) substantially rectangular, and the two positioning holes (located through structure of element (30B)) defined in diagonally opposite corners of the retention module (30B) (Column 4, Lines 44-53).

With respect to claim 13, Bright teaches (Fig. 3) pins (12) disposed at symmetrically opposite sides of a center of the retention module (30) (Column 3, Lines 66-67 & Column 4, Lines 1-3).

With respect to claim 14, Bright teaches (Fig. 3) pins (12) integrally formed (in conjunction with element (80) located in recess of element (12)) from a portion of the retention module (30) facing the printed circuit board.

With respect to claim 15, Bright teaches (Fig. 3) positioning holes (33) defined in the retention module (30), first ends of the pins (12) (in conjunction with element (80) located in recess of element (12)) are interferentially received in the positioning holes

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(33), and opposite second ends (element (18) of element (12)) of the pins (12) are welded (via solder) to the printed circuit board (8).

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bright (US PN 5833472) in view of Katsui (US PN 6487079 B2) as applied above and further in view of Perugini (US PN 5396402)

With respect to claim 10, Bright, as modified by Katsui, teaches (Fig. 3) a printed circuit board (8) having an electronic package (2) and a heat sink (50) as stated in the above rejections to claim 1 & 9.

Katsui does not teach a clip comprising an operating portion that defines a slot.

Perugini et al. teaches (Fig. 3) an operating portion that defines a slot (53) and the slots (53) engagingly receive the catches (43) of a socket (40) (Column 3, Lines 18-22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the clip of Bright, as modified by Katsui, with the operation portion, defining slots of the clip, as taught by Perugini et al. The slots would

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secure the heat sink, clip and integrated circuit and socket assembly (Column 3, Lines 18-22) more securely than the clip of Katsui and still allow for removal of the clip.

With respect to claim 16, Bright, as modified by Katsui, teaches a printed circuit board (8) having an electronic package (20) located thereon and a plurality of through holes (9) therein, a retention module (30) surrounding an electronic package (20), a heat sink (50) defining a plurality of slots and pins (12) in a retention module (30) with four corners.

Katsui does not teach pressing bars extending through corresponding slots.

Pergugini et al. teaches (Fig. 3) a clip (44) defining a rectangular frame like configuration with at least two pressing bars (46) extending through the corresponding slots (64) in a parallel relationship and two pairs of locking devices (43,53) located at two opposite sides of the clip (44), which are perpendicular to the pressing bars (46), and respectively latchably engaged with two opposite sides of a base (40) each of which is vertically aligned with the corresponding side of the clip (44) (Column 3, Lines 18-22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the clip of Bright as modified by Katsui, with the clip of Pergugini including the slots, in order to press the heat sink against the electronic package and secure the heat sink to the retention module.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Liang (US PN 6644396 B2), Smedberg (US PN 6728103 B1), Lofland et al (US 2004/0190258 A1) Liu (US PN 6809929 B2), McHugh et al. (US PN 6574109 B1), Chen (US PN 6639804 B1), Chen (US PN 6466443 B1), Liu (US PN 6621704 B1), Goodwin (US PN 6545879 B1), Eyam et al. (US PN 6639800 B1), Lee et al. (US PN 6611431 B1), Bloomquist (US PN 5208731), Wu (US PN 6542369 B1), Harmon et al. (US PN 5381305), Lai (US PN 6381813 B1), and Davison (US PN 6859367 B2) show the general state of the art regarding heat sinks, retainer and clip assemblies.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ingrid Wright whose telephone number is (571) 272-8392. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on (571) 272-2800, ext 35. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

6/22/2005

IDW


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